

Remarks

By the foregoing amendment claim 22 has been amended to recite a blue emissive lithium quinolate obtained by a reaction process. Claims 24 and 28 have been amended to conform more closely with U.S. patent practice. Claim 35 has been cancelled. New claims 37-42 have been added to the application. The amendment to the claims and new claims 37-42 are supported by page 2, lines 17-25, and page 3, lines 1-5 of the specification. It is respectfully requested that this amendment be entered as it does not constitute new matter.

Claims 22-36 have been rejected under 35 U.S.C. §112, second paragraph on the basis there is no antecedent basis for “the anode” and “the cathode” in claim 22, it is not clear if the hole transporting material must comprise all three materials and “I,I” should be –1,1’-- in claims 24 and 28; there is no antecedent basis for “the mixed lithium quinolate/hole transporting material layer” in claims 31 and 33; the scope of “different metal quinolate” is not clear in claims 33 and 34; the term “the anode” does not have antecedent basis and the term “metal anode” is confusing.

The terms “the anode” and “the cathode” have been amended to read “an anode” and “a cathode” in claim 22. Claim 24 and claim 28 have been amended to recite the language “at least one.” Claim 31 has been amended to depend from claim 27. With respect to the term “different metal quinolate” in claims 33 and 34 this indicates that the compound is a metal quinolate and is different from the lithium quinolate previously recited, either in the metal or quinolate. Claim 36 has been amended to recite an anode, a lithium and metal cathode.

Applicant thanks the Examiner for the helpful suggestions with respect to the rejections under 35 U.S.C. §112, second paragraph.

Claims 22-25 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,720,432 to VanSlyke et al. Before discussing the differences and deficiencies of this reference a brief review of amended independent claim 22 is in order. Claim 22 recites an electroluminescent device which comprises sequentially a conductive substrate which acts as an anode, a layer of blue-emissive electroluminescent material comprising a substituted or unsubstituted lithium quinolate obtained by the reaction of a lithium alkyl or a lithium alkoxide in a solvent comprising acetonitrile with an 8-hydroxy quinoline, the 8-hydroxy quinoline optionally having at least one substituent selected from the group consisting of alkyl, alkoxy, aryl, aryloxy, sulphonic acid, ester, carboxylic acid, amino, amido, aromatic, polycyclic and heterocyclic.

No such novel electroluminescent device including a blue emissive electroluminescent material obtained by the reaction of a lithium alkyl or lithium alkoxide in a solvent comprising acetonitrile with an 8-hydroxy quinoline is disclosed or suggested by VanSlyke et al. Surprisingly, it has been found that a lithium quinolate obtained by this process is photoluminescent and electroluminescent in the blue spectrum.

In this regard the Examiner's attention is invited to Schmitz et al. Chem. Mat. 2000, 12, 3012-3019 which is attached hereto as Exhibit A. Exhibit A, submitted for publication on February 24, 2000, states at page 3012, column 2, that "the emission properties of these complexes and a systematic comparison with Alq_3 have not yet been reported to the best of our knowledge" and at page 3014 that attempted synthesis starting from an alkyl lithium, n-butyllithium, did not lead to desired product and that synthesis of lithium quinolate in highly-dried methylene chloride resulted in blue-green fluorescing materials. Further, Exhibit A

evidences that at the time of filing of the present application, one skilled in the art did not know how to obtain a blue emissive lithium quinolate from a reaction in a solvent comprising acetonitrile, much less have any expectation that it was possible to do so.

VanSlyke et al. merely discloses a “lithium oxine (a.k.a. 8-quinoline lithium)” for use in the organic electron injecting and transporting zone of VanSlyke’s electroluminescent device. There is no teaching or suggestion of obtaining a blue emissive lithium quinolate from a reaction in a solvent comprising acetonitrile as in the claimed invention.

Claims 22, 24, 29, 30 and 36 have been rejected under 35 U.S.C. §102(b) as anticipated by JP 6-145146. Like VanSlyke et al. there is no teaching or suggestion in JP 6-145146 of obtaining a blue emissive lithium quinolate from a reaction in a solvent comprising acetonitrile as in the present invention.

Claims 29, 30, 32 and 34-36 have been rejected under 35 U.S.C. §103(a) as being unpatentable over VanSlyke et al. For the reasons discussed above, VanSlyke et al. fails to teach or suggest the claimed invention.

Claims 22-36 have been rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,281,489 to Mori et al. in view of VanSlyke et al. or JP 6-145146. Like VanSlyke et al. and JP 6-145146, Mori et al. fails to teach or suggest obtaining blue emissive lithium quinolate from a reaction in a solvent comprising acetonitrile as in the present invention.

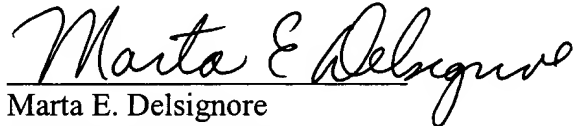
Further, new claims 37-42 are patentable over the cited art.

In view of the foregoing claims 22-42, all the pending claims, are in proper form and in condition for allowance.

Prompt and favorable action is respectfully requested.

Attached hereto is a marked up version of the changes made to the claims by the current amendment. The attached page is captioned “**Version with Markings to Show Changes Made**”.

Respectfully submitted,

A handwritten signature in cursive script, reading "Marta E. Delsignore". The signature is written in black ink and is positioned above the printed name and registration number.

Marta E. Delsignore
Registration No. 32,689

Goodwin Procter, LLP
599 Lexington Avenue
New York, New York 10022
(212)813-8822
Attachment

Version with Markings to Show Changes Made

Please amend claims 22, 24, 28, 29, 31, 32 and 36 as follows.

22. (Amended) An electroluminescent device which comprises sequentially a conductive substrate which acts as [the] an anode, a layer of blue-emissive electroluminescent material comprising a substituted or unsubstituted lithium quinolate obtained by the reaction of a lithium alkyl or a lithium alkoxide in a solvent comprising acetonitrile with an 8-hydroxy quinoline, the 8-hydroxy quinoline optionally having at least one substituent selected from the group consisting of alkyl, alkoxy, aryl, aryloxy, sulphonic acid, ester, carboxylic acid, amino, amido, aromatic, polycyclic and heterocyclic, and a metal contact connected to the lithium quinolate layer which metal contact acts as [the] a cathode.

24. (Amended) An electroluminescent device according to claim [24] 23 in which the hole transporting material comprises [a film] at least one selected from the group consisting of poly(vinylcarbazole), N,N'-diphenyl-N,N'-bis (3-methylphenyl)-[I,I'] 1,1'-biphenyl-4,4'-diamine (TPD)[,] and polyaniline.

28. (Amended) AN electroluminescent device according to claim [28] 27 in which the hole transporting material is at least one selected from the group consisting of poly(vinylcarbazole), N,N'-diphenyl-N,N'-bis (3-methylphenyl)-[I,I'] 1,1'-biphenyl-4,4'-diamine (TPD)[,] and polyaniline.

29. (Amended) An electroluminescent device according to claim [23] 22 in which there is a layer of an electron injecting material between the cathode and the lithium quinolate layer[.,].

31. (Amended) An electroluminescent device according to claim [26] 27 in which there is a layer of an electron injecting material between the cathode and the mixed lithium quinolate/hole transporting material layer.

32. (Amended) An electroluminescent device according to claim [23] 22 in which there is an electron injecting material mixed with the lithium quinolate.

Please cancel claim 35.

36. (Amended) An electroluminescent device which comprises sequentially a substrate formed of a transparent conductive material which is [the] an anode on which is successively deposited a hole transportation layer, [the] a lithium quinolate layer and an electron transporting layer which is connected to a metal [anode] cathode.